

Before the

PUBLIC SERVICE COMMISSION
OF SOUTH CAROLINA

Docket No. 2009-411-G

ENERGY EFFICIENCY PROGRAM REPORT

June 15, 2018



Piedmont Natural Gas Company, Inc.
Energy Efficiency Programs
South Carolina

Docket No. 2009-411-G

INTRODUCTION

Piedmont Natural Gas Company, Inc. (“Piedmont” or the “Company”) respectfully submits this report on the effectiveness of the Company’s energy efficiency programs pursuant to the Public Service Commission of South Carolina’s (“Commission”) May 27, 2010, *Order Approving Energy Efficiency Programs* in Docket 2009-411-G, Order No. 2010-390. This report focuses on Piedmont’s energy efficiency programs in effect during the period from April 1, 2017 through March 31, 2018 (Program Year 8).

BACKGROUND

On October 1, 2009, Piedmont filed its Petition for Approval of Energy Efficiency Programs. By a Revised Notice of Filing issued October 15, 2009, the Commission established December 21, 2009 as the deadline for the filing of petitions to intervene and scheduled this matter for hearing on February 11, 2010. On November 12, 2009, Piedmont filed its affidavits that such Notice had been properly published in the appropriate newspapers serving Piedmont's assigned service territory in South Carolina. Further, on December 9, 2009, Piedmont filed a certification of mailing with the Commission certifying that the Notice of Filing and Hearing had been mailed or provided in electronic format to all Piedmont customers in South Carolina.

On December 30, 2009, Piedmont filed the testimony of Steve Lisk supporting the Petition and the proposed Program Procedures. In its Petition, Piedmont submitted for Commission review and approval, the following three natural gas energy efficiency programs:

1. Customer Education Program - a targeted marketing approach within the Piedmont South Carolina service territory to provide customer energy education, efficiency and conservation messages.

2. Low-Income Energy Efficiency Program - designed to provide energy efficiency measures and weatherization assistance to existing Piedmont low-income residential customers.
3. High-Efficiency Equipment Rebate Program – designed to provide rebates to Piedmont's residential and commercial customers who purchase and install qualifying high efficiency natural gas equipment to replace existing natural gas equipment.

On January 27, 2010, Piedmont and the ORS entered into a Settlement Agreement with respect to Piedmont's program filings. As part of the Settlement Agreement, Piedmont and ORS agreed that Piedmont should be authorized to expend and recover from its South Carolina residential and commercial customers an annual cost of \$350,000 for the operation of the three energy efficiency programs. In addition, these programs would be considered experimental in nature and would operate for a period of three years. ORS and Piedmont further agreed that after a period of three years they would jointly or individually submit any proposed modifications to the programs or program expenditures for review and approval of the Commission. Also, as part of the Settlement Agreement, Piedmont agreed to submit to the ORS and the Commission, on an annual basis in conjunction with the Company's Rate Stabilization Act (RSA) process, a request for recovery of Piedmont's Energy Efficiency program costs for the twelve-month period ending March 31st. Finally, the parties agreed that this report would be submitted by June 15th of each year beginning in June, 2011.

On May 27, 2010, the Commission issued its Directive approving Piedmont's Energy Efficiency Programs.

On September 16, 2010, Piedmont requested that the Commission approve a modification to its Residential Low-Income Weatherization Program to allow the use of both the Federal Weatherization Assistance Program standard and the HUD standard in determining whether a residence qualifies as "low-income." This request was approved by the Commission on September 29, 2010.

On December 21, 2010, Piedmont requested that approximately \$25,000 of unexpended funds in the Residential Low-Income Program and approximately \$40,000 of unexpended funds in the

Customer Education Program be reallocated to the High Efficiency Equipment Rebate Program to meet higher than expected demand in the Rebate program. This request was approved by the Commission on January 12, 2011.

On January 3, 2012, Piedmont requested that approximately \$50,000 of unexpended funds in the Residential Low-Income Program and approximately \$38,000 of unexpended funds in the Customer Education Program be reallocated to the High Efficiency Equipment Rebate Program to again meet higher than expected demand in the Rebate program. This request was approved by the Commission on January 18, 2012.

On January 16, 2013, Piedmont requested that up to approximately \$50,000 of unexpended funds in the Residential Low-Income Program and up to approximately \$35,000 of unexpended funds in the Customer Education Program be reallocated as needed to the High Efficiency Equipment Rebate Program to meet higher than expected demand in the Rebate program. This request was approved by the Commission on February 13, 2013.

On March 28, 2014, Piedmont requested to revise the allocation of funds among the three programs in a manner that was aligned with the average spending pattern for each EE program. The proposed new funding allocation was the following: Customer Education Program: \$15,000, Residential Low-Income Program: \$115,000, and the High-Efficiency Equipment Rebate Program: \$220,000. Piedmont also requested the flexibility to reallocate up to \$15,000 per program to another program without separately requesting additional approval by the Commission. These requests were approved by the Commission on April 9, 2014.

The Company's approved annual budget for energy efficiency programs in South Carolina is \$350,000 per year and Piedmont's actual expenditures for Program Year 8 were 99% of the budgeted annual costs. Different funding levels had to be reallocated between programs because of higher than anticipated customer participation in the Equipment Rebate program. A summary of Program Year 8 funding is shown in Table 1.

Table 1 – Program Year 8 Funding

	Budgeted Annual Costs	Expenditures^{A, B}
Customer Education Program	\$15,000	\$11,971.34
Residential Low-Income Program	\$115,000	\$80,000.00
High-Efficiency Equipment Rebate Program	\$220,000	\$255,258.85
TOTAL	\$350,000	\$347,230.19

A) Represents program expenses recorded between April 1, 2017 and the end of accounting month March 2018.

B) Expenditures shown include reallocations that were made between programs. Original reallocations that were going to be made to the Customer Education program from the Low-Income program had to be reallocated to the Equipment Rebate program due to higher than anticipated customer participation in the rebate program. As a result, the Equipment Rebate program received reallocations of \$18,028 from the Customer Education program and \$20,000 from the Low-Income program.

CUSTOMER EDUCATION PROGRAM

Piedmont designed and distributed several targeted communication products to promote customer energy education, efficiency and conservation messages. Table 2 shows the Customer Education Program expenditures for Program Year 8.

Table 2 – Customer Education Program Expenditures in Program Year 8

	Budgeted Annual Costs	Expenditures^A
Customer Education Program	\$15,000	\$11,971.34
TOTAL	\$15,000	\$11,971.34

A) Represents program expenses recorded between April 1, 2017 and the end of accounting month March 2018.

Table 3 provides a description of each customer education piece that was administered during Program Year 8.¹ A copy of each customer education piece is shown in Exhibit A.

¹ In addition to these SC customer education materials, bill inserts were sent out to customers in all Piedmont's service territories. Some of these mailings included recurring annual bill inserts that were not paid for through funds dedicated for the SC Energy Efficiency Program. These bill inserts dealt with Piedmont's energy savings on-line tools, cold weather energy saving tips and saving money with natural gas water heaters.

Table 3 – Customer Education Communication in Program Year 8

Communication Form	Date Administered	Message
Newspaper Ad	October 2017	Save Energy during the Winter Months
Newspaper Ad	February 2018	Cozy Home – Saving Energy

For Program Year 9, the Company is continuing to look at ways to promote energy efficiency and conservation messages through marketing materials.

RESIDENTIAL LOW-INCOME ENERGY EFFICIENCY PROGRAM

The primary purpose of this program is to provide energy efficiency measures and weatherization assistance, through a third-party, to low-income residential customers in Piedmont's service territory. The program is intended to create a more energy efficient and comfortable home environment for the customers served. In addition to the actual energy savings, there can be additional benefits to the low-income customer including improved health and safety, and increased comfort.

The target population for this program is low-income customers dwelling in single-family homes that are served under Piedmont's residential rate schedule. For the purposes of this program, Piedmont considers a customer to be "low-income" based on guidelines established for the Federal Weatherization Assistance Program or by the United States Department of Housing and Urban Development ("HUD"). When applicable, priority is placed on providing assistance to those eligible elderly individuals with disabilities and eligible families with children.

The primary energy efficiency measures provided to each program participant are based on a comprehensive in-home energy audit. The measures offered and performed for program participants may include:

- Sealing major air leaks in floors and ceilings (penetrations, bypasses, chases)
- Insulating attic, side wall, and/or floors
- Sealing and insulating ducts
- Installing programmable/setback thermostat

- Evaluating, cleaning and tuning heating systems
- Installing general heat waste prevention measures (furnace filters, water heater insulation wrap, piping insulation, water-saving devices, and weather-stripping)

The energy contractor decides, primarily guided by the results of the in-home energy audit, which energy saving measures to install at the participant's home. The energy audit helps the energy contractor determine which energy saving measures would provide the greatest benefit to the participant. Due to safety concerns, a carbon monoxide detector is installed inside the participant's home if one is not currently installed.

During Program Year 1, Piedmont was not able to get started working with the selected organizations as quickly as initially anticipated due to filing changes to the program income guidelines, scheduling conflicts and also the time required to complete the contractual agreements. Based on these delays and other program scheduling issues, the funding start dates for the organizations were then further delayed. In addition, sometimes the organizations that administer these low-income weatherization programs have other delays in their own program which then stretches out the length of time for them to complete the leveraged funding provided by Piedmont. As a result, the time period needed to complete the weatherization work can stretch out over multiple program years and also the funding cycles can get staggered between program years.

For Program Year 8, Piedmont worked with the Furman University Community Conservation Corps (“Furman CCC”) which serves low-income homeowners in the Greenville County and surrounding areas. The Furman CCC has utilized all the funding from Program Year 8.

Table 4 summarizes the Low-Income Program expenditures.

Table 4 – Low-Income Program Expenditures in Program Year 8

	Estimated Annual Costs	Expenditures^A
Low-Income Program	\$115,000	\$80,000 ^B
TOTAL	\$115,000	\$80,000

A) Represents program expenses recorded between April 1, 2017 and the end of accounting month March 2018.

Tables 5 and 6 shows the program status (as of May 30, 2018) for the Furman CCC program and it reflects the Program Years 7 and 8 weatherization work.

Table 5 – Program Year 7 Low-Income Program Summary

Furman CCC	
Counties Served	Greenville
Funding Status	Program year funding is depleted.
Additional Information	Completed 13 homes through the program. Some of the work included: energy audits, blower-door testing, installing weather-stripping on doors/windows, installing attic and sidewall insulation, air sealing, reattaching ductwork, air sealing and insulating ductwork, and fixing and installing smoke/CO2 detectors. This included funding for replacement of unsafe items such as replacing unsafe natural gas furnace when a cracked heat exchanger was discovered.

Table 6 – Program Year 8 Low-Income Program Summary

Furman CCC	
Counties Served	Greenville
Funding Status	Program year funding is depleted.
Funding Status	Completed 16 homes through the program. Some of the work included: energy audits, blower-door testing, installing weather-stripping on doors/windows, installing attic and sidewall insulation, air sealing, reattaching ductwork, air sealing and insulating ductwork, and fixing and installing smoke/CO2 detectors. Of the 16 homes, there were a total of 21 residents and this included 5 that were disabled, 1 child and 9 senior citizens above the age of 65.

The overall vision of the Furman CCC is to promote financial and environmental stability within a safe, quality living environment for all individuals in need. Piedmont's funding has allowed the Furman CCC to continue its program and has helped students/volunteers get involved in activities where they are able to give back to the community. The CCC started out as a partnership among Furman University's Heller Service Corps, Furman's Community Relations Department, Furman's Shi Center for Sustainability, the City of Greenville, the Greenville County Redevelopment Authority, and the United Way of Greenville County, along with other stakeholders, to provide home weatherization and education services to Greenville residents who qualify for assistance. Originally two AmeriCorps members, supported through the United Way of Greenville and Furman University, administered the program. Through this partnership, Furman students, under the guidance of the AmeriCorps members and weatherization professionals, provided education to homeowners, as well as weatherization services for homes which met the guidelines for qualification. In the fall of 2013, the Furman CCC formed a partnership with the Habitat for Humanity of Greenville County to work jointly to provide low-income weatherization services. Information about the Furman CCC program is shown in Exhibit B.

The Furman CCC has a strong presence in low-income neighborhoods in the Greenville Community. As with many low-income communities, the quality of housing can sometimes be substandard and the houses typically lack standard energy efficiency features such as good insulation levels. In these low-income areas, the Program coordinator occasionally attends community and neighborhood meetings to promote and establish relationships with communities and homeowners in an effort to provide information about the weatherization program. The Furman CCC spends some of its time developing an outreach strategy to recruit homeowners for the weatherization assistance program. The Furman CCC works with local agencies to promote the program and information about the program is listed on the Furman website (www.furman.edu/ccc). The group also works with Furman's Marketing and Public Relations department to design door hangers to market the program and also looks at other outreach events in the local community.

After eligible participants are identified for the program, the Furman CCC has the participant fill out an application form and then it is reviewed to verify the income level and confirm the participant is a Piedmont customer. If the homeowner is qualified for the program, a pre-weatherization meeting is scheduled with the homeowner to go over the process and answer any questions about the program. The Furman CCC then utilizes an experienced energy auditing company to administer the home energy audit and determines what type of energy efficiency improvements can be performed on the home. The energy auditor also identifies any unsafe conditions. After energy improvement needs are addressed, the Furman CCC Program Coordinator works primarily with local contractors from Habitat for Humanity of Greenville County to complete the work. Once the weatherization has been completed, the CCC Program Coordinator returns with the energy auditor for a follow-up audit to verify that weatherization measures were effectively implemented. If there are any areas of the home that were not properly weatherized, the contractor is responsible for returning to the home to ensure that overlooked areas are addressed. After each home is completed, the resident receives information about how to further reduce their energy usage and they are also provided with some energy saving tips.

In some cases, the program attempts to incorporate student volunteers to help out with the energy efficiency improvements, but this depends upon the number of volunteers and the availability of scheduling with the homeowner. The partnership that the Furman CCC has developed with Habitat for Humanity has provided them with greater access to contractors, improved community visibility, and increased use of volunteers; all while helping to decrease the cost of some weatherization services as compared to hiring private contractors for some of the work.

Over the course of its eighth year, the program utilized volunteers for all 16 home weatherizations. The volunteers helped when needed and when appropriate by installing measures such as faucet aerators, showerheads, carbon monoxide detectors, smoke detectors, air sealing/caulking, and insulation. In cases where specialty work like HVAC repair was needed then licensed contractors were utilized. Examples of volunteer groups that assisted during the program year were Alpha Phi Omega Service Fraternity, Habitat for Humanity community volunteers, Cherry Bekaert Accounting Firm, Furman's Environmental Action Group, and family

members and friends of the homeowners. In total, 68 volunteers contributed 488 hours of service with the Community Conservation Corps for this program year.

While continuing to enhance the services offered, the Furman CCC program explored new techniques to increase the effectiveness and reach of the program. The program received funding from a block grant with the City of Greenville, which allowed for additional weatherization work and other services. The CCC continued its mutually beneficial partnership with Habitat for Humanity and has started exploring collaborations with other community partners. Looking to provide more of a “whole-home” approach, the CCC is beginning to develop its relationship with Rebuild Upstate and Homeworks of America. These home repair organizations can provide critical repairs that are necessary before any of the weatherization is done.

As part of Piedmont’s continued support of the Furman CCC program, Piedmont received the University Partnership Award at Furman’s Bell Tower Ball in February 2018. Piedmont was honored by Furman because of its support of the CCC weatherization program and helping the program provide weatherization services to more than 100 low-income homeowners.

For Program Year 9, Piedmont plans to continue working with the Furman CCC and is also evaluating what opportunities there might be to work with other organizations that administer a low-income weatherization program.

HIGH EFFICIENCY EQUIPMENT REBATE PROGRAM

This program provides rebates to Piedmont's residential and commercial customers who purchase and install qualifying high efficiency natural gas equipment. The residential rebates apply to high efficiency water and space heating equipment, since water heating and space heating constitute a large portion of residential energy usage. Commercial customers are offered a rebate on the purchase and installation of a high efficiency tankless water heater.

This program enables customers to offset some of the higher cost of choosing a more efficient piece of equipment. This program is intended to help influence a customer to choose a more

energy efficient piece of equipment. An upgrade to a higher efficiency water heater or furnace, given consistent usage patterns, will help the program participant achieve recognizable energy savings. The extent of the energy savings will vary for each participant, depending on a variety of factors including their current energy efficiency.

In 2017, the Department of Energy (DOE) implemented some changes to the way that water heaters were tested by the manufacturers. DOE revised its testing and qualifications for water heaters and the standards changed from using an Energy Factor (EF) to a Uniform Energy Factor (UEF). The water heaters design and construction features didn't actually change but instead it was the procedures for how the ratings were calculated that were revised and now these fall into different hot water usage categories of Very Small, Low, Medium and High usage draw patterns. Water heater manufacturers were required to start utilizing these tests and the UEF ratings starting in June 2017.

Piedmont revised our program slightly about 6-months later by revising our efficiency requirements for rebates to reflect the new changes going from the EF to the UEF water heater ratings. Starting on January 15, 2018, Piedmont updated our website and rebate forms to reflect the new UEF changes. For storage tank water heaters, the rebate qualifications changed from an EF of 0.67 to a UEF of 0.64. For tankless water heaters, the minimum rebate qualification changed from an EF of 0.82 to a UEF of 0.81. The corresponding rebate amounts did not change. Note, DOE only revised the ratings for water heaters; thus, no revisions were made to the furnace efficiency ratings used in the rebate program.

Tables 7 and 8 summarizes the equipment rebates that are offered and also the corresponding equipment efficiency requirements based on the applicable changes to the new UEF water heater rating system.

Table 7 – Residential Equipment Rebate Summary

	Rebate Amount	Minimum Required Efficiency ^A
Natural Gas Storage Tank Water Heater	\$ 50	UEF = 0.64 (or higher)
Natural Gas Tankless Water Heater	\$ 250	UEF = 0.81 (or higher)
Natural Gas Forced Air Furnace	\$ 300	AFUE = 90% (or higher)

A) UEF is the Uniform Energy Factor; AFUE is the Annual Fuel Utilization Efficiency

Table 8 – Commercial Equipment Rebate Summary

	Rebate Amount	Minimum Required Efficiency ^A
Natural Gas Tankless Water Heater	\$ 250	UEF = 0.81 (or higher)

A) UEF is the Uniform Energy Factor

The Equipment Rebate program is available to customers under Piedmont's residential rate schedule² and commercial rate schedules.³ Each customer is required to submit a rebate application, along with proof of purchase and installation of the qualifying equipment. Upon approval of the application, the rebate check is mailed to the customer. In addition, each rebate recipient receives an energy efficiency kit that includes items to help further reduce their natural gas energy usage. The energy efficiency kit includes the following:

- (1) Low-flow showerhead
- (1) Low-flow kitchen aerator
- (2) Low-flow faucet aerators
- (2) Weatherstripping rolls
- Thank you letter, energy conservation tips, water saving tips

Piedmont has received positive program feedback from our customers, as well as from the contractors who have used the Equipment Rebate program to encourage the purchase of high-efficiency natural gas equipment.

² Effective November 1, 2017, the residential rates were revised to only one standard rate which is rate 201 – Residential Service.

³ Effective November 1, 2017, the commercial rates were revised to two standard rates which are rates 202 – Small General Service and 252 – Medium General Service.

To ensure compliance with its eligibility criteria, Piedmont verifies that each rebate applicant is indeed a Piedmont customer and confirms that the installed equipment model meets all the program equipment efficiency criteria. For Program Year 8, there were 751 eligible customer rebate applications processed and those customer applications were received from 23 different SC cities. Based on reviewing the eligibility of the rebate applications, an additional 35 customer rebate applications were determined to be ineligible. For each ineligible application, a letter was mailed to the applicant with an explanation of why the rebate application was deemed ineligible. Examples of why a customer might be deemed ineligible include:

- Equipment installed didn't meet rebate equipment high-efficiency levels
- Submitted form was from homeowner who wasn't a Piedmont Natural Gas customer
- Equipment installed was for new construction instead of gas-to-gas replacement

Table 9 shows the number of approved rebate applications, by customer sector:

Table 9 – Number of Approved Rebate Applications in Program Year 8

Residential Rebate Applications	749
Commercial Rebate Applications	2
TOTAL	751

Table 10 shows the amount of different equipment that was installed as part of the Program Year 8 rebate funds. Because some customers installed multiple pieces of equipment at their service address, the number of equipment installations exceeds the number of approved rebate applications.

Table 10 – Equipment Installed per Approved Rebate Applications in Program Year 8

	Storage Water Heater (EF = 0.67 or higher)	Tankless Water Heater (EF = 0.82 or higher)	Forced Air Furnace (AFUE = 90% or higher)	TOTAL
Residential Equipment Installed	4	109	695	808
Commercial Equipment Installed	N/A	4	N/A	4
Total	4	113	695	812

Table 11 shows the Equipment Rebate program expenditures for Program Year 8.

Table 11 – Equipment Rebate Program Expenditures in Program Year 8

	Budgeted Annual Costs	Expenditures^A
Program Development and Administration	\$9,000	\$5,001.00
Communications	\$12,000	\$9,913.35
Rebate Incentives	\$195,000	\$236,575
Evaluation, Measurement & Verification	\$4,000	\$3,769.00
TOTAL	\$222,000	\$ 255,258.35

A) Represents program expenses recorded between April 1, 2017 and the end of accounting month March 2018

For the Program Year 1 analysis, Piedmont worked with an energy consultant to determine the achieved energy savings for the residential participants. Based on the time required to perform the energy analysis and funding limitations, Piedmont is using the same achieved energy saving values for Program Year 8. Since there were not enough commercial installations to perform an accurate statistical analysis of the achieved energy savings, the initial deemed savings value is being used as a proxy for the achieved energy savings. For the residential analysis, the consultant reviewed Piedmont's initial deemed savings and performed a billing analysis of the customers' installed equipment. The consultant used a per-heating-degree-day modeling approach since there were limited numbers of 12-months post data due to the timing of the analysis. Table 12 shows the savings per residential customer that is being used for the Program Year 8 analysis.

Table 12 – Deemed and Billing Analysis Gross Savings per Residential Customer

Measure	Original Deemed Annual Savings^A (Therms)	Billing Analysis Annual Savings^B (Therms)
Residential Storage Water Heaters (EF=0.62 or higher)	12.6	12.6 ^C
Residential Tankless Water Heaters (EF=0.82 or higher)	72.9	43
Residential Furnace (AFUE = 90% or higher)	81	110

A) Deemed Savings is the measure-level savings values as utilized in Piedmont's original program planning analysis. Deemed savings were determined by estimating the energy savings based on a baseline efficiency for each piece of equipment.

B) Billing Analysis is the measure-level savings values estimated by the energy consultant. This analysis looked at the customer's energy consumption, average heating degree days, and the average daily energy savings. This complex model used a weighted approach to compensate for any missing pre and post-installation consumption data.

C) Due to the low number of installed storage water heaters, there was not enough data to analyze the storage water heater energy savings; the initial deemed savings value was used a proxy for the achieved annual savings.

Table 13 represents the annual energy saving comparisons based on the initial deemed energy savings and the achieved energy savings. The total deemed annual savings shown is based on the original estimated number of participants and the original deemed savings values, including both the residential and commercial customers. The total annual savings is based on the actual number of installations shown in Table 9 and the savings based on the billing analysis, including both the residential and commercial customers.

Table 13 – Total Program Annual Energy Savings

Measure	Original Deemed Total Annual Savings (Therms)	Total Achieved Annual Savings per Billing Analysis (Therms)
Storage Water Heaters ^A (EF=0.62 or higher)	315	50
Tankless Water Heaters ^B (EF=0.82 or higher)	13,231	5,376
Furnace (AFUE = 90% or higher)	13,300	76,450
Sub-Total	26,846	81,876
Weatherization Kits Mailed Out ^C (Residential Only)	12,390	6,638
TOTAL	39,236	88,514

A) Original/Achieved savings based on savings from water heater of EF=0.62; savings achieved by new water heater standards of EF = 0.67 is not used for this analysis.

B) Includes both residential and commercial installations.

C) For the achieved annual savings, assuming 50% installed and achieved savings of 50% of deemed savings.

The total dollar savings and average savings per customer were calculated using the achieved energy savings, the number of equipment rebates issued, and the average SC rates during Program Year 8. This is shown in Table 14.

Table 14 – Total Rebate Program Annual Dollar Savings^A

	Average Annual Dollar Savings per Customer	Total Annual Dollar Savings
Residential	\$ 105.85	\$ 79,279.47
Commercial	\$ 281.59	\$ 563.19
TOTAL	\$ 106.32^B	\$ 79,842.65

A) The dollar savings were calculated by using the average SC residential/commercial rates for Program Year 8. This is based on the weighted average of the actual number of customers per rate class.

B) Average total annual dollar savings per customer based on the total annual dollar savings divided by the total number of residential and commercial customers. Since there were no commercial customers the total annual savings reflect the same amount as the residential.

Piedmont worked with an energy consultant to determine the cost-effectiveness testing and the consultant analyzed the data based on the number of equipment rebates issued in Program Year 8 and the analyzed energy savings per measure.

The energy consultant used the tests as defined by the California Standard Practice Manual to evaluate the cost-effectiveness of this program. This analysis of program costs and benefits included the following:

- Total Resource Cost Test (TRC): This test examined the program benefits and costs from the perspectives of Piedmont and its customers. Benefits included fuel cost reductions, and costs included those incurred by Piedmont and the program participants.
- Utility Cost Test (UCT): This test examined the program benefits and costs from Piedmont's perspective. Benefits are in the form of reduced fuel costs while costs included any incurred administrative, measure, or incentives costs. This test is also commonly referred to as the Program Administrator Cost Test.
- Participant Cost Test (PCT): This test examined the benefits from a program participant perspective. Costs included any measure costs incurred by the participants. Benefits included rebates paid by Piedmont and bill reductions due to implementing the efficiency measures.


The energy consultant evaluated the cost-effectiveness testing at a program level for the Equipment Rebate Program and the results were calculated by analyzing the planning avoided gas costs and also the program year avoided gas costs. For the main tests, the TRC and the UCT, the results were greater than or equal to 1.0 which signifies that the program is considered cost-effective. The achieved energy analysis savings are shown as a ratio of the program benefits to program costs. The results are shown in Table 15.

Table 15 – Equipment Rebate Program Cost-Effectiveness Results for Program Year 8

Test	Achieved Energy Analysis Savings (Planning Avoided Costs)	Achieved Energy Analysis Savings (Program Year Avoided Costs)
Total Resource Test (TRC)	2.86	1.40
Utility Cost Test (UCT)	3.99	1.96
Participant Cost Test (PCT)	2.26	2.26

EXHIBIT A


NEWSPAPER AD



Get Ready to Save Energy During the Winter Months

- Have your heating system inspected each year by a qualified professional to ensure it is working properly
- Change or clean your furnace filters each month during the heating season
- Upgrade your old furnace to a new high-efficiency model (newer models can be up to 98% efficient!)
- Install a programmable thermostat to maximize your energy savings
- Seal leaks around doors and windows with caulk or weatherstripping to reduce unwanted drafts

For more helpful information about saving energy, please visit us at **piedmontng.com** or you can also check out: **energysavers.gov**.



**Piedmont
Natural Gas**

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f t y Learn more at piedmontng.com
or give us a call at 800.752.7504.

10.2017

NEWSPAPER AD



Is your
HOME COZY?

Keep your home cozy this winter by checking windows, attics and crawl spaces for areas that can cause unwanted drafts. This could help decrease your monthly bill and prevent cool air from entering and warm air from escaping your home.

QUICK FIXES TO SAVE YOU MONEY & ENERGY



Open draperies and blinds on sunny days to maximize the sun's warmth. Close them at night to help insulate against the cold air outside.



Use your ceiling fan in the clockwise direction to help disperse warm air that rises and collects near the ceiling.



Use our Energy Saving Tools to analyze your home's energy usage.



**Piedmont
Natural Gas**

 piedmontng.com
 800.752.7504

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EXHIBIT B



- [Parents](#)
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- [About](#)
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- [Campus Life](#)
- [Athletics](#)

[Home](#) > [Academics](#) >> [Shi Center for Sustainability](#) >> [Programs](#) >> [Community Conservation Corps](#)

The Community Conservation Corps (CCC) provides free home weatherization to low income homeowners in the greater Greenville community. We partner with Habitat for Humanity of Greenville County to reduce energy consumption and promote the financial homeowners through weatherization, energy conservation, and education. Furman students help to track program savings and certain projects.

To ensure a positive and professional experience for our clients, the CCC hires experienced, certified home energy auditors to d each home's needs. Expert contractors then perform all necessary services and provide all clients with the most relevant informr their household. Some of our services include new or additional insulation around water heaters and in attics and crawlspaces, stripping, air-sealing, crawl space vapor barriers, safety checks on combustion appliances, and more. We estimate that by prov and other home weatherization services, we can help our clients save up to 35% on their home energy bills.

How to apply

Submit your home for a free home weatherization! We want to help as much of Greenville as possible by saving you money whil the impact on our natural environment of unnecessary energy consumption.

[See if you qualify, and learn how to apply.](#)

Additional Resources

Not eligible for our program? [Learn about other programs in our community](#) and discover [weatherization tips](#) you can use in yo home.

Volunteer with us

There are a number of ways individuals - students and community members - can volunteer with the CCC, ranging from superv construction and weatherization to event planning and outreach. You do not have to be a Furman student to volunteer. Downloa and [Minor](#) waivers as PDFs now.

Contact us

To learn more about the Community Conservation Corps, get in touch with us today:

ccc@furman.edu
864.294.3680
[CCC Program Coordinator](#)

[Home](#) > [Sustainability](#) » [Community Outreach](#) » [Community Energy Resources](#)



Here in the Greenville Community we have access to great weatherization resources at both the local and national levels. Whether you have already been weatherized and want to learn more about home weatherization, were unable to qualify for our program and wish to look elsewhere, or are a volunteer and want to know more about the work you contribute to, the resources below are sure to help. You will find both local partner agencies and national resources that we find helpful in our work.

Energy Efficiency	Weatherization	Solar Resources	Local Resources
Large national sites containing information about national measures of energy efficiency	General resources, links to some projects, and ideas for your own home weatherization	Resources and advisement on investing in solar panels in the upstate	Organizations in the Greenville area involved in home weatherizations and renewable energy
South Carolina Energy Office	US Green Building Council, SC Chapter	US Solar Radiation Maps	Habitat for Humanity Greenville, SC
US DOE Energy Efficiency and Renewable Energy	Home Power Magazine	Find Solar	Central Electric Power
EERE Energy Savers	Building Green	Interstate Renewable Energy Council	Upstate Forever
Energy Star	Weatherization Assistance Program	South Carolina Solar Council	Greenville County Redevelopment Authority
Home Energy Saver	South Carolina Weatherization Assistance	American Solar Energy Society	Piedmont Natural Gas
American Council for an Energy-Efficient Economy	Roof Savings Calculator	Build it Solar	Duke Energy
	Roscoe Brown	Clean Energy States Alliance Solar Financing Guide (pdf)	



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Repair and Weatherization Programs

Own Your Home? We Offer Help with Exterior Repairs and Weatherization

[Home](#) > [Become A Homeowner](#) > [Repair and Weatherization Programs](#)



Habitat Greenville has two programs to help families with low income who own their home.

Our weatherization program is conducted in collaboration with Furman University's Shi Center for Sustainability's Community Conservation Corps. Services include weatherstripping, air sealing, installation of insulation and vapor barriers, and safety checks. The goal of the program is to reduce energy consumption and promote the financial stability of homeowners with low income. The application process is managed by the Community Conservation Corps. For details and a link to the application form, visit the [CCC website](#).

Funded by Thrivent Builds for Lutherans, our repair program provides for exterior repairs not exceeding \$2,500 that can be accomplished in one day. The work is carried out by experienced Habitat and Thrivent volunteers, with homeowners participating through sweat equity. We are currently completing Thrivent Repairs projects for this fiscal year. Please check back for updates regarding the next application period, for fiscal year 2016-17.






CERTIFICATE OF SERVICE

The undersigned hereby certifies that a copy of the attached *Energy Efficiency Program Report* is being served this date electronically and via FedEx Overnight upon:

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And that a copy of the attached *Energy Efficiency Program Report* is being served this date electronically or via U.S. Mail upon:

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This the 15th day of June, 2018.

s/ James H. Jeffries IV
James H. Jeffries IV